

THE MERSEY COAL MEASURES.

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All who are interested in the progress of Tasmania must regret the discontinuance of the geological survey, and the more so because there are so few here who have at the same time the inclination and the opportunity of prosecuting what is certainly, in a new country, the most important branch of scientific investigation. It is a commonly prevalent notion that there is nothing to be done in the way of geological discovery in the settled districts of Tasmania; whereas the fact is that, excepting reports on special districts, we have no information of any practical value which can be made available for the guidance of an intelligent prospector; and even these are deprived of much of their intended usefulness by reason of the interruption of the survey before it was possible to establish a satisfactory connection between the formations examined in various parts of the colony.

I have lately read an interesting paper on the Mersey coal-field, written by Mr. Hainsworth, of Latrobe, and published in the *Launceston Examiner* in September, 1872. After noticing the characteristic features of the Mersey coal measures, and discussing the *quæstio vexata* of the age of the Newcastle coal seams, he concludes an argument, which is distinguished no less for the intelligence which it displays, than for the modesty with which the writer's views are stated, in the following words:—"The practical result to be deduced from the foregoing facts, and the one most interesting to the general newspaper reader is, that the Mersey beds are identifiable in age with the West Maitland beds, a locality situated four miles north-west of the Newcastle coal-field in New South Wales. In West Maitland five seams of coal have been found, all occurring beneath certain fossiliferous beds which are identical, as regards age, with the Mersey fossiliferous beds; and though it does not follow that the same number of seams will be found in the Mersey coal-field, the facts support the inference that other and thicker seams may exist below the present one." Those who take any interest in the subject are probably familiar with the controversy between the Rev. W. B. Clarke and Professor M'Coy as to the conclusions to be drawn from the palæontological evidence afforded by the fauna and flora of the coal measures of New South Wales, and it is not my intention at present to refer to it, except for the purpose of noticing an important point in the evidence connecting the Mersey beds with

those of West Maitland, to which no allusion is made in any of the reports to which I have had access. The occurrence of the genus *Glossopteris* in the West Maitland beds is one of the main facts upon which the supporters of the mesozoic theory rely; though there are some eminent authorities who refuse on independent grounds to allow that its evidence is at all conclusive. Mr. Clarke, however, did not base his argument in favour of the palæozoic age of the coal upon either the flora or fauna alone, but upon their simultaneous or alternate occurrence in the same geological formation. As regards the Mersey beds, and their relation to those of New South Wales, it seems to me that an important omission in the evidence has been made (which I have only noticed within the last day or two), and that Mr. Clarke and others who have written upon the subject have had to form their deductions without any guidance except that afforded by the marine fossils. Now it so happens that among the very few plant impressions which I possess from the Mersey coal measures is a specimen of *Glossopteris*, probably *G. browniana*, obtained by myself several years ago from the clod overlying the coal in what was then known as "Johnson's mine," to the east of Tarleton. It is almost incredible that the discovery of this fern should have been made only by a passing traveller with a few minutes at his disposal; but as I cannot find that any notice of it has been published, I think it desirable to place the fact on record. We have now two distinct localities, separated by some hundreds of miles, where the coal beds containing plant impressions of supposed mesozoic age are overlaid by strata with marine fossils, which are undoubtedly palæozoic, and the contemporaneity of the two formations is established.

Here, however, we must pause, and be careful to avoid drawing sanguine conclusions as to the existence of other and thicker seams beneath what is known as the 2 feet seam at the Mersey. Mr. Gould, who made a careful survey of the district, and collected a large amount of information from the borings and other works which had previously been executed, points out that the coal measures have been proved to a depth of 250 feet below the 2 feet seam without success. The character of the coal itself, as compared with that occupying the same geological horizon in New South Wales, is a somewhat discouraging feature; and when we add to this the excessive dislocation of the whole series by numerous faults, and the circumstance of its position in a synclinal and probably shallow trough of Lower Palæozoic rocks, it becomes evident that in this particular locality there are no strong grounds upon which a further expenditure can be recommended, except in developing the seams which have been

already proved, and in examining those upper members of the series which have not yet been tested.

There is, however, a large area within the settled districts, of which little or nothing is known, and my chief object in penning these remarks is to call attention to the necessity of obtaining more complete and satisfactory information respecting the palæontology of the rocks which are supposed to belong to the carboniferous series, as well as of all others which contain any organic remains. The fossiliferous sandy shales, mudstones, and limestones of the Southern districts have always been spoken of as underlying the coal measures. But they are also believed to be contemporaneous with the marine beds at the Mersey, containing *Fenestella*, *Stenopora*, *Spirifera*, *Producta*, &c., and overlying the coal, and it is very important that this point should be settled by a careful comparison of all the specimens which can be collected from the two formations. There are numerous localities in which, if we can only obtain some certain *data* to start with, good grounds may be shown for attempting a systematic examination of the country with a reasonable prospect of success, among which I may mention the western bank of the Tamar, the basin of the Piper's River, the north-western flanks of Ben Lomond, and various portions of the midland districts, and of the basins of the Derwent and Coal River. I see little prospect of the profitable working of the magnificent seams of the Fingal district for many years to come ; but there is no reason why we should not, at any rate, endeavour to establish their geological position, of which little is known, except that they are evidently much more recent than those of the Mersey, and that there are some grounds for classing them in a totally distinct series. For myself, I regret very much that, with good opportunities for forming general conclusions as to the geology of the greater part of Tasmania, I have had no leisure for many years past for the collection of evidence, or the examination of any particular formation ; and all that I can do at present is to urge the importance, on scientific as well as on economical grounds, of stimulating the exertions of all collectors whose services can be enlisted in the good cause, and securing by every available means what is now the chief desideratum in our museum.

NOTE.—I have to report the discovery of a rock in the Mersey district containing casts of *Trilobites*, and what I take to be *Orthis* and *Bellerophon*, as well as other forms, which are too indistinct to be made out with any certainty. It is at no great distance from the spot where impressions of *trilobites* were discovered by Mr. Gould some years ago, and may prove to belong to the same formation.